



Nematology Newsletter

An Official Publication of the Society of Nematologists

From the President

I am pleased to report that the first-ever virtual Society of Nematologists meeting was held during the week of December 14-18, and I think we can count it as a success! Given the short window we were able to open for abstract submissions, we had very good response from the nematology community, with 97 registrants. I want to thank Fatma Kaplan of Pheronym, Inc. for the fantastic presentation she gave as our keynote speaker, showing us how nematodes continue to make an impact even beyond our planetary borders. Our program included a mixture of poster presentations, all of which were hosted on Figshare. We had several sessions of live Q&A with poster presenters and asynchronous discussions that took place on our Slack workspace, VirtualSON2020. I want to thank the PI's, post docs, and students who presented their work. It was certainly nice to hear that such a variety of nematology research has continued to go on despite the covid-19 restrictions. The Cobb Foundation portion of the program featured "Nematology 101," a comprehensive educational resource presented by Jon Eisenback. The time and care he has put into this was evident, and it will undoubtedly be a valuable resource to members of SON for years to come. We ended our live program with viewings of the winning presentations from the Cobb Foundation Video Contest. It was great to see scientific information conveyed in such creative and engaging ways. I hope it was an encouragement to other budding filmmakers out there to share more content like this with the nematology community.



I welcome any feedback you have regarding what worked or didn't work for you as a participant in the virtual meeting. I know there are things we can improve on as we hold more online events, but with only a few tools we accomplished a lot!

I am grateful for the diligence of our board and especially our business manager, Jacki Beaucham, who covered my blind spots as we charged ahead with the website and conference. As 2021 dawns, as president I hope to turn my attention to further exploring how we can expand our con-

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tent on the new Wild Apricot website, involving our committees in developing content and using it to facilitate communication between our annual meetings. I will continue to refine some of our constitutional processes, and provide support to Kathy Lawrence, our President-Elect, who has the dual challenge of program planning and local arrangements for our meeting scheduled for September 12-16, 2021. I hope that we will be able to meet up in person as we have done for so many years, but I'm grateful that the virtual space gave us a chance to 'see' one another until it is safe to meet. I hope future online events are by choice, not out of necessity.

I wish everyone a restful holiday season.

Stay safe, everyone.

Andrea Skantar
SON President

THE NATHAN A. COBB NEMATODOLOGY FOUNDATION

Terry Niblack, Chair David Shapiro, Vice-Chair Axel Elling, Treasurer Janete Brito, Secretary

"Promoting Nematology Worldwide"

*Nathan A. Cobb
1858-1932*



Creating the Nematology of Tomorrow

When you contribute to the Nathan A. Cobb Foundation you are helping to build capacity in Nematology – capacity to step up to some of the grandest scientific challenges humans face.

Our students and early career researchers are changing the future of Agriculture, Biomedicine, Education and the Environment, and making fundamental discoveries about the world we live in. With the support of the Cobb Foundation, students can attend scientific meetings and workshops where they can present their latest research findings, but also network with other potential collaborators and future employers in science and industry. Talk about bang for the buck!

In the hustle and bustle of the holiday season, it can be easy to lose sight of what really matters. As you pause for a moment of gratitude, consider how financial support to a student can radically change their trajectory. It certainly changed mine. How about you?

To make your tax-deductible donation go to <https://nematologists.org/sys/web-site/?pageId=7744>.

Thank you, Byron Adams, Chair, Cobb Foundation

2020 Cobb Video Contest Results

The Cobb Foundation is happy to announce the results of the 2020 edition of the video contest.

The Foundation had received 9 high-quality videos that were all very creative! Congratulations to all the participants!

The videos were reviewed by 9 nematologists from 4 different countries and the results are:

First place: [Nematodes and their Natural Enemies](#) submitted by Max Helmsberger

Second place: [Exploring Nematodes with Deepak Haarith](#) submitted by Deepak Haarith

SON Executive Board Minutes, Wednesday, November 23, 2020

Present

A. Skantar, A. Elling, T. Faske, A. Gorny, C. Khanal, K. Lawrence, T. Mengistu, G. Phillips, N. Schroeder, D. Shapiro-Ilan, B. Sipes, S. Stetina, D. Haarith, J. Beacham

Call to order

The meeting was called to order at 9:02 am HST by President A. Skantar.

Approval of agenda

A. Elling moved to accept the agenda and K. Lawrence seconded. The agenda was approved.

Minutes

K. Lawrence moved to accept the minutes and S. Stetina seconded. The minutes of the September 2, 2020 EB meeting were approved unanimously.

Old Business

1. IFNS moved ICN2020 to May 1-6, 2022. This affects our meetings for 2023 and 2024. We will discuss this in January 2021.
2. 2021 Annual Meeting status was updated. Information about the meeting will be posted on online in January after virtual 2020 meeting concludes.
3. ad hoc Diversity and Inclusion Committee will be chaired by A. Gorny. Horacio Lopez-Nicora has agreed to serve as well. More members are needed and will be solicited. To commence, a climate survey to the membership was suggested. We will revisit in the new year.
4. Society website migrated to Wild Apricot platform. President Skantar thanked J. Beacham for her efforts. There are still some bumps, such as options for renewal periods and directory access to members, to work through.
5. Virtual 2020 Annual Meeting has a tight timeline. Figshare is being used for posters. Fatma Kaplan of Pheronym, Inc. will be the keynote speaker on December 16, 2020. Information will be posted to Twitter, Facebook, Listserve, and D. Neher contacted to share the announcement to the ONTA listserve.
6. Nematology Newsletter needs a software license for InDesign. G. Phillips may be unavailable for long periods during 2021.

B. Sipes moves to allocate up to \$250 to purchase a site license for InDesign. N. Schroeder seconds. The motion passed unanimously.

G. Phillips will work with D. Haarith to transition and as a contingency plan for 2021.

New Business

1. Journal of Nematology Editor-In-Chief D. Shapiro-Ilan will be moving on after 4 years. R. Sommer is willing to serve as EIC.

D. Shapiro-Ilan moved to confirm R. Sommer to assume EIC in February 1, 2021 for a 3-year term ending in December 2023. N. Schroeder offered a second. The motion passed unanimously.

2. Page charges for Journal of Nematology are set to begin in January 2021. Some issues are still pending such as being able to check member status.

3. Exeley contract auto-renewal will occur in December 2022. We need to be aware that request for a running Table of Contents has been pending with them for a long time and take action if we do not want to renew. We may want to re-negotiate contract to reflect a larger number of articles before charges for manuscripts begin.

2. Other nematology webinars/conferences/talks have been noted. South African society is having a meeting in September 2021. We want to be aware of other meetings that may be occurring. ONTA has not announced any plans.

3. Committee rosters are being check. The website allows input from committees and is flexible. Most rosters are accurate but challenges in making corrections exist when the lists are not accurate. Encouraging members to join committees is important. Discussion turned to funds for committee activity.

4. Cobb Foundation Board discussed spending safeguards. Fund raising activities for the Virtual Annual meeting were discussed by the Cobb Board. The Cobb Board is clarifying the Barker IFNS Endowment and the extent of foundation responsibility for amounts in excess of endowment. Clarification on donations to Cobb and Society were discussed.

Adjournment.

Submission by Brent Sipes



"Crossing borders: a world of nematode diversity and impact to discover"



Announcing New Dates for the ICN 2022

Dear participants,

The Seventh International Congress of Nematology meeting dates have **once again** been rescheduled due to the coronavirus situation. **The ICN 2020 will be held 1-6 May 2022 at the Palais des Congrès in Antibes Juan-Les-Pins (France).**

This decision was proposed by the meeting organizers in consultation with the European Society of Nematologists. Representatives of the 18 nematology societies comprising the Congress met and agreed unanimously that the change is necessary because of continuing uncertainty about when travel and meeting restrictions will end, and when most people will decide it is again safe to travel. All societies rejected the option of cancelling the 7th ICN, because it is the only nematology meeting fully organized, funded and ready to occur when the pandemic ends, and because cancellation would incur enormous financial penalties. Most other 2021 on-site, international conferences are rescheduling to 2022 for similar reasons.

The scientific program will be maintained as nearly as possible in its current form, but with revised dates. Authors will have the opportunity to revise their original abstracts and session organizers will have the ability to review and revise their agendas. We kindly ask authors not to contact us at this time as conference arrangements are being adjusted. More information will be sent in due course.

Bursaries that were awarded previously will be honored for those attending the Congress. A second bursary competition for graduate students is being considered, pending the availability of funds.

Official letters from the ICN Organizing Committee, requesting refunds/rescheduling of airline tickets for Congress delegates, will be sent to airlines and can be obtained from lwduncan@ufl.edu.

Again, we advise you to make the appropriate changes regarding travel and, if you made your own booking (not with Alpha Visa Congrès), hotel reservations. Participant's registration fees will be transferred automatically and hotel reservations arranged by Alpha Visa Congrès will be rescheduled to the new dates

which you will be able to modify according to new travel plans.

Registration for the Seventh International Congress of Nematology is currently 744 nematologists from 59 countries, including 100 student and early career scientist bursary recipients. The scientific program comprises 32 concurrent sessions with 288 oral presentations, 12 workshops, 12 keynote speakers, and poster sessions with more than 500 presentations. The mid-meeting excursions will provide outstanding

opportunities to explore the splendid nature and the amazing culture of the French Riviera.

Very few nematology meetings will have occurred in the entirety of 2020-21. Hopefully, opportunities to interact virtually will be provided by some societies and possibly the IFNS in the coming months. But the 7th ICN will be an important opportunity to finally meet together again, face to face, to renew our work among friends, colleagues and students. We look forward to welcoming you in Antibes in 2022, where we shall celebrate an end to the crisis at a truly memorable scientific meeting.

Dr. Pierre Abad, 7th ICN Chair

Ernesto San-Blas, Scientific Program Chair

Larry Duncan, IFNS President



Introducing Dr. Adrienne Gorny

I am originally from Canton, Michigan, a town located in between the larger cities of Detroit and Ann Arbor, an area famous for Detroit-style pizza, Big Ten football, and Motown music. Knowing my childhood dream of being a veterinarian probably would not pan out due to an aversion to blood, I came to the realization that plants were equally as fascinating (and, also, did not bleed). I attended Purdue University in West Lafayette, Indiana for my undergraduate, where I majored



in Botany, with a minor in Plant Pathology. At Purdue, excellent faculty and instructors mentored me and hooked me on plant science research. However, it was not until graduate school that I became interested in nematodes and fell down the “wormhole”. For my Ph.D. I worked with Dr. Sarah Pethybridge at Cornell University, specifically at the Cornell AgriTech campus in picturesque Geneva, New York. My thesis research focused on *Meloidogyne hapla* and *Pratylenchus penetrans* in Irish potato. In conducting this project, I was able to work directly with potato growers in New York, learning about their nematode management successes and challenges, which gave me an appreciation for the role of nematology in agricultural extension services. I began as an assistant professor and extension specialist in the Department of Entomology and Plant Pathology at North Carolina State University in August 2019. Outside of the lab, I enjoy spending time in nature and in art museums, and wasting time in pool halls.



At NCSU, my lab's research focuses on the epidemiology and management of plant-parasitic nematodes problematic in North Carolina and the Southeastern United States. Within this, my team is beginning projects on the emerging root-knot nematode species *Meloidogyne enterolobii* in sweetpotato, soybean, and other crops. Short-term and long-term, I am interested in improving our nematode management tools, including chemical control, cultural tactics, sanitation, and host resistance. Additionally, during graduate school, I was drawn to those simple yet elegant experiments measuring the risk initial nematode population densities pose to crop yield or plant growth. I hope to explore this type of threshold evaluation work further for root-knot nematode species in vegetable crops in North Carolina. Lastly, I am also interested in application of molecular diagnostics to support identification and quantification of field populations, and as a tool to explore population distribution and change over time.

Reaching this point, it must come as no surprise that my favorite nematode are the root-knot nematodes!

Lab website: <https://plantnematology.wordpress.ncsu.edu/>



In Tribute – Dr. Stephen R. Koenning

Dr. Stephen R. Koenning died of complications related to cancer on September 5, 2020. Steve received B.S. and M.S degrees at the University of Arizona and a Ph.D. at North Carolina State University working under the direction of Drs. K.R. Barker and D.P. Schmitt. After re-

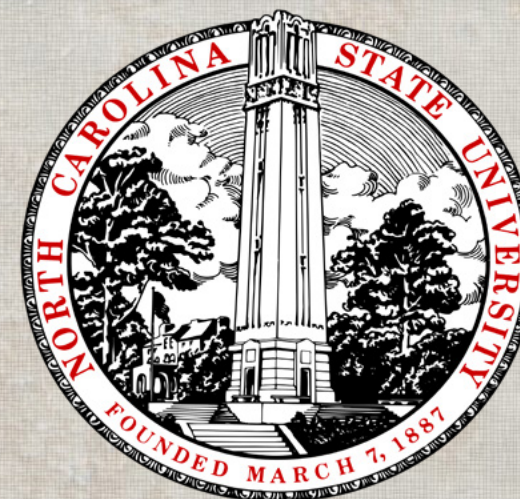


ceiving his Ph.D. in 1984 he accepted a postdoctoral fellowship with Dr. Sam Anand at the University of Missouri-Columbia. At UM-C, Dr. Koenning began working on developing soybean germplasm that is resistant to the soybean cyst nematode, *Heterodera glycines*, a subject he spent much of his career investigating. In 1986, he returned to the Department of Plant Pathology at North Carolina State University where he served as Research Associate Professor and Extension Specialist until his retirement in 2014. During his tenure at North Carolina State University, Dr. Koenning gradually assumed full extension pathology responsibilities for field crops, while also maintaining an active and productive research program on plant nematodes. During his tenure at NCSU, a major thrust of his program was the evaluation of cultural practices and cropping systems on the population dynamics of soybean cyst nematode, leading to the development of a systems-oriented management approach. Because at least 60% of North Carolina soybean acreage is infested with this nematode, growers suffered enormous economic losses. Dr. Koenning made seminal contributions to the alleviating the losses to growers caused by this nematode, and his methods have been extended to growers worldwide. Dr. Koenning completed a very productive program that resulted in numerous scientific papers and book chapters, particularly the influential review “Developing sustainable systems for nematode management” which was published in *The Annual Review of Phytopathology* in 1998. In recognition of the significance and impact of this work, Dr. Koenning received The Novartis Award for Excellence from the Society of Nematologists in the year 2000. Dr. Koenning was widely and rightly recognized as a world leader for his research on management of soybean cyst nematode.

Dr. Koenning also served the Society of Nematologists (SON) with distinction. He was Treasurer of the N.A. Cobb Foundation from 2009-2012 during which

time transformational changes were made. During his tenure as Treasurer, the foundation grew and expanded its activities supporting nematology students. He was a Senior Editor for the *Journal of Nematology* from 2005-2008, and he served as a long-time member of the Extension Committee (1994-2012), chair of the Extension Committee (1988-1989), Honors and Awards Committee (2003-2005), and the Ecology Committee (1985-1987) of SON. He also served on the Nematology Committee for the American Phytopathological Society from 1996-1999. Dr. Koenning was the North Carolina representative on the long-time Hatch Southern Regional Multi-State Project for several cycles serving with nematology colleagues across the southeast United States.

Even after his retirement in 2014, Dr. Koenning remained active in nematology research as part of a team of scientists at NC State conducting innovative nematode management research with university and government partners in Sub-Saharan Africa. Steve had a good heart and truly loved the potential to contribute to the success of smallholder farmers in Africa, and those who knew him were the beneficiaries of his warmth and wit. Steve is survived by his wife Diana; Daughter, Amber Hester; Son, Nathan Koenning and Granddaughter, Corinne Hester, all of Raleigh, NC; Brother, Thomas Koenning of CO.



IN HONOR OF DR. HASSAN MOJTAHEDI

11/23/1940 —
10/18/2020

From Richland, WA

Born in Tabriz, Iran



Dr. Hassan Mojtahedi – a husband, father, and dear friend to many – passed away from cancer in his home on October 18, 2020 at the age of 79.

Hassan was born on November 23, 1940 in Tabriz, Iran to Majid Mojtahedi and Roughiyeh Javad. His father died during World War II before having the chance to meet his newborn son. With a desire to study plant pathology, Hassan moved to the United States in 1969 and earned his Ph.D., specializing in nematology at UC Davis. He returned to Iran to share his knowledge at Isfahan University and married Shokooh Behran, a fellow professor and scientist, in 1983. After their daughter was born in the midst of the Iran-Iraq War, Hassan returned to the United States with his new family, this time permanently, taking a position in Prosser at the WSU Research and Extension Center. After retirement, he established a private soil science lab in the Tri-Cities.

Hassan contributed to over 50 publications during his tenure as a researcher, but he was much more than a scientist. He had a passion for Persian poetry, current events, and spending quality time with friends and family. He was also an avid bridge player and Bronze Life Master, playing frequently at clubs in Sunnyside and Richland. He attended the Islamic Center of Tri-Cities (ICTC) and was an effective leader in matters relating to ICTC affairs.

Hassan was preceded in death by his father Majid, his mother Roughiyeh, and his brother Javad. He is survived by his wife Shokooh and his daughter Shabnam and several other family members in both Iran and the United States.

To close, his family would like to share a poem from the great Persian poet Omar Khayyam:

*This cup was made by the Wise Lord
With love & care to the heights soared
The potter who shaped with such accord
To make and break the same clay, can also afford.*



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Elimination of *Tobacco rattle virus* from viruliferous *Paratrichodorus allius* in greenhouse pot experiments through cultivation of castle russet

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This paper was edited by
Horacio Lopez-Nicora.

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2019.

Abstract

Corky ringspot (CRS) is a widespread potato tuber necrotic disease caused by *Tobacco rattle virus* (TRV) infection. In the Pacific Northwest, this virus is transmitted by the stubby root nematode (SRN) within the genus *Paratrichodorus*. Remediating CRS affected fields is a major challenge that can be mitigated by growing plant varieties that are resistant to TRV infection. Growing alfalfa has been shown to reduce TRV levels in CRS infested fields over time but the development of a potato cultivar with these same capabilities would be of great economic benefit to potato growers. Castle Russet is a new potato clone that does not develop symptoms of CRS disease. To assess its ability to reduce soil virus load, Castle Russet, tobacco var. "Samsun NN", alfalfa var. "Vernema", and Russet Burbank potato were grown for a period of 1 to 3 months in soils containing viruliferous SRN populations at two different inoculation pressures (60 nematodes/pot and 1060 nematodes/pot) in greenhouse pot experiments. SRN population size and the presence of TRV were assessed over several months post inoculation. Results indicate that plant host and length of exposure significantly influence SRN population dynamics, whereas the TRV infection status of bait plants was significantly affected by both of these factors as well as inoculation pressure. These results suggest that both alfalfa var. "Vernema" and Castle Russet are resistant to TRV infection and may potentially be used to eliminate the virus from fields affected by CRS.



In Memoriam of Dr. Ahmed Gamal Al-Sharif

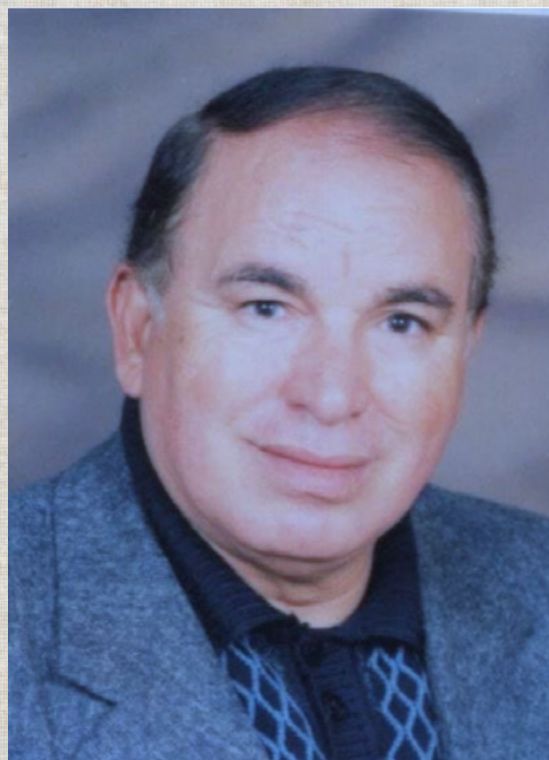
June 20, 1941 to October 19, 2020

Dr. Ahmed Al-Sharif – a husband, father, and dear friend to many of us in Egypt, USA, and other countries – passed away in hospital at age 79 from Covid-19 on October 19, 2020.

Dr. Ahmed Al-Sharif was born June 20, 1941 in EL-Sinbellaween District, Dakahlia Governorate, Egypt. He received B.S., M.Sc., and Ph.D. degrees from the Plant Protection Department at Cairo University where he chooses nematology to be his career-long research and teaching focus. He was appointed as an Assistant Lecturer at the Agricultural Zoology Department, Mansoura University in January 1975, then Lecturer (Assistant Professor) in December 1976, Associate Professor in March 1981, and Professor in June, 1985. He retired as Professor Emeritus in the same Department in 2001.

Dr. Al-Sharif had a long history of research, teaching and administrative positions at Mansoura University and he taught nematology and agricultural zoology courses elsewhere in Egypt and in Saudia Arabia. He contributed to more than 60 publications during his career. He chaired the Agricultural Zoology Department twice (1993-1995 and 1998- 2000). He received many prestigious governmental and university awards including the Mansoura University Merit Award (year 2002), Best Lecturer in Agricultural Zoology and Nematology (2006) and the University of Taif (Saudia Arabia) Merit Award (1978). He chaired or was a member of the Higher Education Promotion Committee for associate and full professor in Egypt for 2 cycles. He participated in over 75 national and international conferences and workshops. He visited UF (Dr. Donald Dickson's) laboratory as a visiting professor in 1993 where both supervised an Egyptian Ph.D. student.

Dr. Al-Sharif was more than one of the finest nematologists in Egypt. He was known as a very giving person who spent a great deal of his time helping young scientists, students and peers who were never refused his help. I



had the pleasure and the honor to know him closely during the times I applied to become Associate and Full professor in Egypt and I deeply appreciated his kindness. I watched as he introduced new topics and research ideas to others and fondly recall his generosity, his smile and the comfort he gave to anyone who knew him.



Microscopic nematode that liquefies slugs may be answer to controlling this invasive pest

by Kym Pokorny, Oregon State University

Two Oregon State University researchers have discovered a microscopic soil-dwelling nematode on the Corvallis campus that could be an important tool against invasive slugs that cause billions of dollars a year in agricultural damage worldwide.

In Oregon at least half of the 20 top agricultural commodities suffer from slug damage, including the important grass seed industry with an estimated \$60 million in losses annually, according to Rory Mc Donnell, associate professor in crop and soil science in the College of Agricultural Sciences and slug specialist for OSU Extension Service. Although figures aren't available for the \$1 billion nursery industry, Oregon's top commodity, slugs and snails account for huge losses in that sector, as well, Mc Donnell said.

The parasitic nematode, *Phasmarhabditis hermaphrodita*, could decrease those losses significantly, said Dee Denver, professor and head of the OSU Department of Integrated Biology in the College of Science and a nematode specialist. It has been used in Europe as a bio-control product under the brand name Nemaslug for more than 25 years, but is not registered in the U.S. by the Environmental Protection Agency.



http://areitzsoroa.blogspot.com/2010_12_05_archive.html

“The thought process is that if it works in Europe and we find it here and it works here, it might be easier to get it registered by the EPA,” Mc Donnell said. “If we can provide evidence it's native, that makes a strong case for developing it as a bio-control. But we want to make sure there are no effects on native slugs or snails. We don't want bio-control gone awry. That's very, very important.”

Growers rely on expensive chemicals to control slugs and only get 10% to 60% efficacy, according to Mc Donnell. The pesticides can have unintended effects on non-target organisms and can contaminate waterways.

“The damage they cause is a massive issue,” Mc Donnell said. “We surveyed 200 growers throughout the Willamette Valley to gather their opinion of controlling slugs with pesticide. We found only 30% said they were happy with the performance of chemicals.”

For three years, Mc Donnell, whose position was originally funded by the Oregon Legislature to find solutions to the state's slug problem, travelled Oregon hoping to find *P. hermaphrodita*. When he did, it was in his backyard – the OSU campus in Corvallis. The discovery was the first in North America outside of California, where researchers at the University of California, Riverside, including Mc Donnell, found it in 2014.

Finding the nematode wasn't easy. There are thousands, if not millions, of nematode species, and comma-sized *P. hermaphrodita* is almost invisible to the untrained eye. To identify it, Denver, who is a nematode specialist, had to extract and sequence its DNA and compare it to a national repository.

To locate the nematode, Mc Donnell and his staff set and scouted traps at the edges of agricultural fields, looking for gray field slugs (*Deroceras reticulatum*) that may have succumbed to nematodes. The nematodes invade the slug through a hole at the back of its mantle – the saddle-shaped part at the front of the slug. Once inside, the nematode kills and feeds on the slug and reproduces at a fast rate – one nematode can produce thousands of offspring in a matter of one to two weeks.

“When a slug is infested with nematodes, it liquifies,” Denver said. “You end up with a swarming pile of worms. It's pretty gruesome.”

The gray field slug, which is the bane of home gardeners as well as agriculture, has invaded most of the world. It is the most important invasive slug species in agricultural production, Mc Donnell said. In Europe, *P. hermaphrodita* can reduce crop damage by slugs by up to 90%. Direct damage isn't the only way *D. reticulatum* affects plants; it can be a vector for disease and also defecates and leaves slime trails, which reduces the quality of the crop.

As they continue to work on *P. hermaphrodita*, Denver and Mc Donnell are growing other species to determine genetic relationships and perhaps discover related nematodes that also have potential as bio-controls.

“Nematodes are abundant and diverse – there are millions of them in every aspect of the earth's biosphere,” Denver said. “They are really understudied and, with Rory's lab as one of a very few in North America devoted to slugs and snails, we're in

a good position to do this research.”

The results of their research have been published in the journals PLoS and Biological Control.

More information: Dana K. Howe et al. Phylogenetic evidence for the invasion of a commercialized European *Phasmarhabditis hermaphrodita* lineage into North America and New Zealand, PLOS ONE (2020). [DOI: 10.1371/journal.pone.0237249](https://doi.org/10.1371/journal.pone.0237249)

Rory J. Mc Donnell et al. Lethality of four species of *Phasmarhabditis* (Nematoda: Rhabditidae) to the invasive slug, *Deroceras reticulatum* (Gastropoda: Agriolimacidae) in laboratory infectivity trials, Biological Control (2020). [DOI: 10.1016/j.biocontrol.2020.104349](https://doi.org/10.1016/j.biocontrol.2020.104349)



Oregon State
University



Nematode cancer test to become available in Fukuoka, Tokyo next year amid pandemic

Article from The Mainichi: <https://mainichi.jp/english/articles/20201225/p2a/00m/0na/017000c> ((Japanese original by Yosuke Kadota, Kyushu News Department)).

FUKUOKA -- A Tokyo-based company that put a high-precision testing method for cancer using a roughly 1-millimeter nematode into practical use for the first time in history will launch a service in which people in this southwestern Japan prefecture and the capital's 23 wards can be tested at home from January 2021 at the earliest.

Takaaki Hirotsu, head of Hirotsu Bio Science, made the announcement during a courtesy call to Fukuoka Prefecture, which supported the development of the new testing method.

The percentage of those getting screened for various types of cancer nationwide is plummeting due to the spread of the novel coronavirus, and local governments are hoping that the launch of the new service will prevent the late detection of cancer.

The “N-NOSE” tests make use of nematodes’ strong sense of smell and their nature of liking the smell and being drawn to the urine of cancer patients. It can detect 15 types of cancer from stage 0 with an accuracy rate of about 85%, and individuals with suspected cancer will be asked to take a detailed examination to identify where in the body the cancer is.

It was adopted as a health service for prefectural government officials in December, and after it’s put to practical use in January 2021, people will be able to take the test at medical institutions and elsewhere.

Individuals will first need to apply to receive the new service via a special website, and take a urine sample at home, which will then be collected by the company. A test costs 9,800 yen (approx. \$94.60) each, and a handling charge of several thousands of yen will be added.

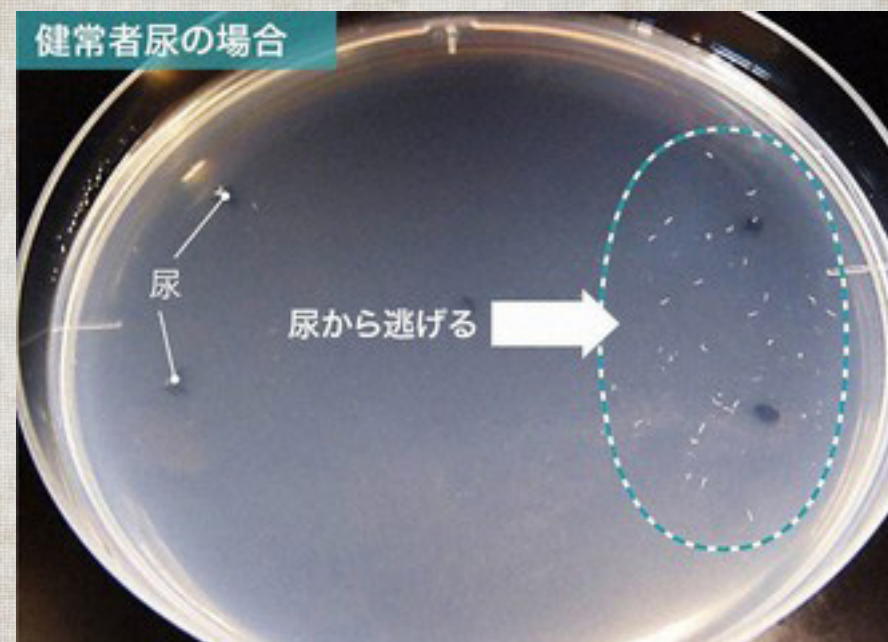
According to the Japan Cancer Society, the ratio of those who were screened for cancer in May, when the coronavirus state of emergency was being issued, dropped to 8% compared to the same month last year. Even after the state of emergency was lifted, people have been refraining from going out and many local

governments have canceled or postponed cancer tests. Due to those reasons, the number of those who were screened for cancer this year was about 30% less than usual, and it is expected that the number of people diagnosed with cancer will decrease by nearly 4,000.

Hirotsu said, “During the coronavirus pandemic, there are people who do not want to receive tests that take a long time at medical institutions. But the number of people who can die of cancer is dozens of times more than those who can develop severe symptoms after becoming infected with the coronavirus. We would like to increase the cancer screening rate by introducing a method of testing that does not require people to go out.”



An enlarged image of nematodes used in the “N-NOSE” testing method is seen in Fukuoka’s Hakata Ward on Dec. 21, 2020. (Mainichi/Yosuke Kadota)



Nematodes are seen moving closer to a urine sample from a cancer patient in this image provided by Hirotsu Bio Science.

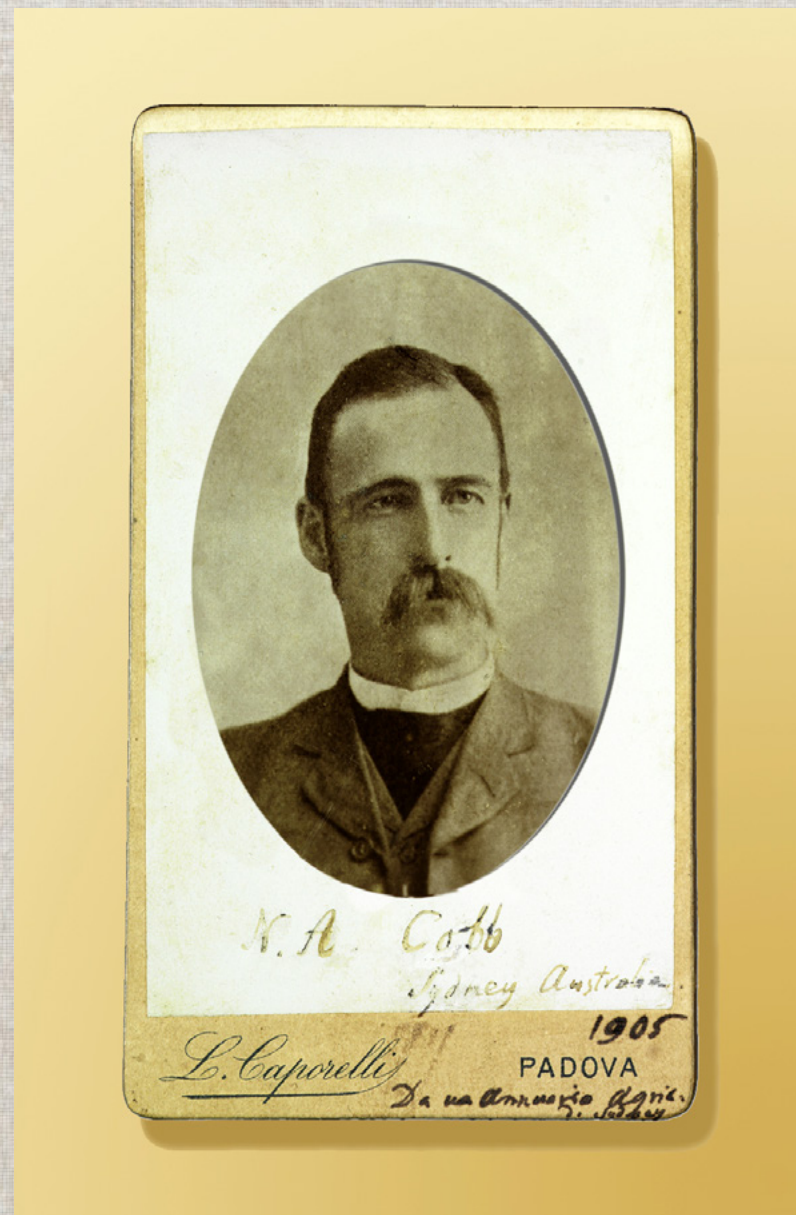



Hirotsu Bio Science head Takaaki Hirotsu, right, explains how nematodes detect the smell of urine from a cancer patient to senior Fukuoka Prefectural Government officials at the prefectural office in Fukuoka’s Hakata Ward on Dec. 21, 2020. (Mainichi/Yosuke Kadota)

Call for Nematode Trading Cards

Please consider making your submission(s) to the Nematode Trading Card Collection organized by Dr. Jon Eisenback. Six different templates are available for the following categories: 1. People (red background), 2. Nematodes (green background), 3. Habitats (yellow background), 4. Morphology (orange background) 5. Symptoms (purple background) and 6. Control (blue background). If you have any questions, please feel free to contact Dr. Jon Eisenback (jon@vt.edu).

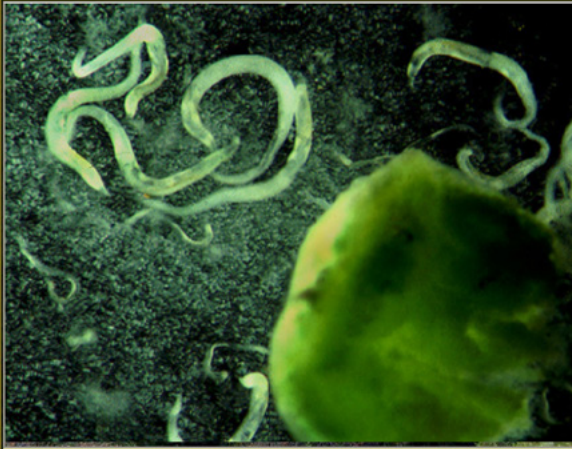
Dagger nematode	Grape
	
Surface necrosis, sloughing cortex	
<p>A distinct symptom caused by dagger nematode, <i>Xiphinema</i> spp., is a sloughing of the cortex in heavily damaged roots. Reduced root systems are marked with root necrosis, suppressed secondary and feeder roots, devitalized and swollen root tips, occasional tufts of stubby rootlets, and darkened root systems with brown lesions on short feeder roots.</p>	
④	5



1916-2007	USA - Cornell
	
Bill Mai	
<p>An early leader of plant nematology, his first research projects dealt with the biology and management of the golden nematode, effectively eliminating its spread. Remembered for his "Pictorial Key to Genera of Plant-Parasitic Nematodes," he trained more than 45 graduate students who became leaders in research, industry, and teaching in the US and world. He served as President of SON and was awarded as a Lifetime Honorary Member.</p>	
④	19

Seed gall nematode

Wheat



Aerial parasite

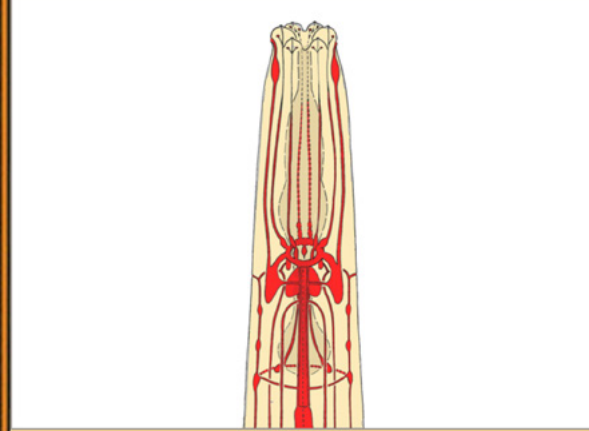
Nematodes may be parasites of leaves, stems, buds, and flowers of trees and herbaceous plants. Most of these forms have the ability to become anhydrobiotic, and/or they are dependent upon insects as vectors. *Ditylenchus* is found in stems, *Aphelenchoides* parasitizes leaves and buds, *Litylenchus* occurs in leaves of woody plants and trees, and *Anguina* inhabits flowers, seeds, and leaves.

④

53

Nerves

Sensory organs



Nervous system

The nervous system of nematodes is made up of a central nerve ring near the anterior end that functions as the primitive brain. Several nerves extend anteriorly to innervate the sensory organs in the head including sensilla and two amphids that are chemoreceptors. Four longitudinal nerves are contained within the hypodermis and extend posteriorly to innervate the rest of the body.

Modified from Chitwood

④

46

Free-living

*Geraldus bakeri* female

Very common on the rough bark of trees. Lip region with six feather-like cirri. Stoma broad and heavily sclerotized. Esophagus cylindrical with precorpus, but no metacarpus. Narrow isthmus that connects to a large, vavulated basal bulb. Amphidelphic with vulva mid-body. A gelatinous vulval plug often present. The tail gradually narrows to a dorsal, bifurcate, terminal hook. Rapidly transitions for active to anhydrobiotic state and vice-versa.

④

34



Photograph of a live specimen of *Thelastoma* sp. using techniques developed by Dr. Jon Eisenback. This nematode was found inside the hindgut of a millipede that was found in Dr. Eisenback's own back yard! He used sodium azide to paralyze the nematode after he dissected it from the intestine. After extraction and removal from the intestine, he took sequential photos with his DIC microscope to give an overall composite of the nematode.

Fort Valley State University Seeking Master's Student

Fort Valley State University (MS Program in Biotechnology, College of Agriculture) is seeking a Master's student to study control of the small hive beetle using entomopathogenic nematodes.

The major advisors on this project will be Dr. George Mbata (Fort Valley State University) and Dr. David Shapiro-Ilan (USDA-ARS).

The position will come with an Assistantship and stipend.

Preferred start date will be spring semester, January 2021.

If Interested,

1. Please complete a graduate online application form available at FVSU.edu
2. Send your CV and a letter of interest to Dr. Mbata at mbatag@fvsu.edu or Dr. Shapiro-Ilan at David.Shapiro@usda.gov

Please also include a list of three references that we may contact.

University of Georgia seeks Postdoc

A Postdoctoral Associate position is available in the nematology laboratory in the Department of Plant Pathology, Tifton Campus (<http://www.caes.uga.edu/campus/tifton/>). Priority will be given to qualified applicant that can start in January 2021. The successful applicant will conduct research on critical plant-parasitic nematodes of vegetable crops. This includes, but is not limited to, morphological and molecular identification of nematodes, genetic diversity of root-knot nematodes, role of antagonistic fungi and bacteria on nematode suppression, and use of resistant varieties/rootstocks alone or in combination with nematicides for nematode control. The successful candidate is expected to publish in refereed journals and to collaborate with drafting grant proposals and reports. The successful candidate is also expected to be involved in training MS and PhD students, research technicians and hourly employees, deliver research findings to scientific and extension communities.

Qualifications: PhD in Nematology, Plant Pathology or related field with hands-on experience in performing advanced molecular biology techniques for detection or genetic diversity analysis of nematodes, technical experience in testing nematicides in different production systems, and performing standard statistical models. Experience in isolating and identifying nematode antagonistic fungi or bacteria is desirable. The applicant should have a valid driver's license or the ability to get one soon after hire.



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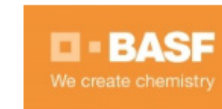
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We wish to express our gratitude to the following companies who support our society and contribute to its continued growth:



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Dear Nematology Newsletter Readers and SON members:

Two items are listed for your consideration. Since we know that students are the future of our discipline, please consider supporting the Nathan A. Cobb Nematology Foundation: <http://www.crec.ifas.ufl.edu/societies/nacobb/projects.shtml>. This foundation's primary purpose is to raise money to provide travel for students to scientific meetings.

You will soon receive a reminder to pay your 2021 dues for the Society of Nematologists. To continue to be a member in good standing, please pay your dues before January 1, 2021. Also, please make a generous contribution to the Nathan A. Cobb Nematology Foundation with your tax-deductible support to the Foundation when you renew your SON membership at <http://nematologists.org/products/>.

Gary Phillips, Editor
Nematology Newsletter

Please submit your contributions to the *Nematology Newsletter* at the following email address:
gphilli9@utk.edu

